

ADVICE NOTE: MARINE FISH FARMING AND THE ENVIRONMENT

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Introduction

1. This Advice Note provides information about the marine aquaculture industry, explains the framework which has been put in place to encourage the sustainable development of the industry, provides practical advice on the operation of marine fish farms and considers the environmental effects and constraints to development. It should be read in association with the related Policy Advice Note “Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters (2002)”, and Procedure Guidance Note “Interim Scheme for the Authorisation of Marine Fish Farms in Scottish Waters”.
2. At present, the Crown Estate (CE) issue leases for new shellfish and fish farm developments. The Scottish Executive is committed to the introduction of planning controls over aquaculture developments when a suitable legislative opportunity arises. Once introduced the CE will continue to issue leases for new developments, however, planning authorities will determine planning applications. Until the necessary legislation is in place, the interim arrangements outlined in the “Interim Scheme for the Authorisation of Marine Fish Farms in Scottish Waters” remain in place.
3. Prospective developers are strongly advised to discuss their proposals with the regulatory authorities and statutory agencies before submitting formal applications. This will help them to identify potential constraints at an early stage. Each application is considered on its merits and in the context of existing development. All applications should be supported by sufficient information to enable the regulatory authorities and their consultees to assess the likely effects. Further advice on the likely information required by the regulatory authorities can be found in the Environmental Impact Assessment (Fish Farming in Marine Waters) Regulations 1999 and associated guidance, located on the Scottish Executive website. The roles and responsibilities of the relevant authorities are set down in paragraphs 11-28 below.
4. The Scottish Executive has prepared this advice in consultation with Scottish Natural Heritage (SNH) and the Scottish Environment Protection Agency (SEPA), and following a widespread consultation.

The Industry

Economics

5. The marine fish farming industry has two main components:
 - fish farms, predominantly salmon but increasingly other species as well; and
 - Shellfish farms, producing a range of marine mollusc species.

In addition, freshwater salmon farms produce smolts for on growing in seawater but are outwith the scope of this paper.

6. There are around 330 marine salmon farms and 360 shellfish farms. In addition, there are a small number of sites where other marine species such as halibut, sea trout, cod and haddock are farmed. Currently, virtually all marine fish production takes place in the inshore waters of the west coast and islands, where the most favourable operational conditions for marine aquaculture are to be found. Shellfish farming shows a similar distribution, although there are fewer shellfish farms in Shetland and Orkney, where lower water temperatures result in slower rates of growth.
7. The industry makes an important contribution to Scotland's rural economy. The value of salmon output in 2001 was over £300million, greater than that of the Highland beef and lamb industries put together. It is estimated that salmon farming and its ancillary industries currently provide around 6,500 jobs in Scotland, many of them in remote locations where alternative employment opportunities are scarce. The following table gives further information on current production levels for the main species farmed in Scottish Waters.

Salmon	The Atlantic salmon (<i>Salmo salar</i>) is the main fish species farmed in Scottish waters. Nearly all UK salmon production is located in Scotland and salmon production is the most economically important sector of the marine fish farming industry. Salmon farming has steadily grown in recent years, with production rising from some 32,000 tonnes in 1990 to 145,000 tonnes in 2001.
Rainbow Trout	The other main finfish species farmed commercially in Scottish waters is the rainbow trout (<i>Oncorhynchus mykiss</i>). Most Scottish trout production takes place in freshwater. However 6 marine sites, which are generally used to rear larger trout, are engaged in production. In 2000, they contributed 784 tonnes [15%] to total rainbow trout production in Scotland.
Halibut	Six companies, operating from 7 sites, are currently involved in the development of halibut farming. 1997 saw the first commercial harvest of the species, amounting to about 0.5 tonnes. Estimates suggest that this could rise to about 80 tonnes by 2000. [[can update with 2001 data once available c. end June].
Sea trout	1 company operating from 2 sites in Shetland is currently producing sea trout. Estimates suggest a harvest of some 70 tonnes in 1999. [[can update with 2001 data once available c. end June].
Turbot	Three companies, operating from three sites, are currently involved in the development of turbot in Scotland. The first commercial harvest from these operations is expected to reach 100 tonnes in 1999. [[can update with 2001 data once available c. end June] - may disappear].
Cod	The development of cod farming is still in its infancy but research being conducted by the Sea Fish Industry Authority (SFIA) in collaboration with a number of fish farms and retailers is producing very encouraging results. The first commercial harvest is expected in 1999. [[can update with 2001 data once available c. end June].
Shellfish	Shellfish farming in Scottish coastal waters is almost exclusively concerned with mollusc production. The main species are mussels (<i>Mytilus edulis</i>), native oysters (<i>Ostrea edulis</i>), Pacific oysters (<i>Crassostrea gigas</i>), and king and queen scallops (<i>Pecten maximus</i> and <i>Aequipecten opercularis</i>). Although there are similar numbers of finfish and shellfish leases, the scale of shellfish cultivation is relatively small, with a value in 2001 of about £4million. While a few relatively large farms account for the bulk of Scottish production, many Scottish shellfish farms are small enterprises producing less than 10 tonnes per year. Shellfish farming employs about 370 people in rural areas and provides a valuable source of income in many crofting communities, much of the employment being part-time.

8. Further information can be found in SEERAD Scottish Fish and Shellfish Annual Production Surveys, available on the FRS website at www.marlab.ac.uk

Production Methods

9. Almost all Scottish farmed **finfish** are grown in seawater cages moored to the seabed. A variety of sea cage systems are currently in use. In most designs fish are contained in net bags suspended from floating collars. Most installations consist of rafts of cages, often arranged round a framework of walkways to facilitate servicing. Larger and more robust semi-submersible cage systems are being developed for use in open sea conditions. A finfish farm site may contain several installations, each maintained in position by its own mooring system. In recent years, the industry has made greater use of automation (feedbarges, pump-ashore facilities, etc). Market-driven demands for high quality, low cost products will inevitably promulgate this trend.
10. **Mussels** are grown on weighted ropes suspended either from buoyed lines (the long line system) or rafts. **Oysters** are grown either in trestles placed in the intertidal zone, in stacks of trays located just below the low water mark, or in net bags suspended from rafts. **Scallops** may be grown in nets hung from buoyed lines or rafts, or suspended on ropes by threading a tag through a hole drilled in one of the lobes of the shell ("ear-hanging"). They can also be grown on the seabed.

The Regulatory Framework

The Scottish Executive Environment and Rural Affairs Department (SEERAD)

11. SEERAD is responsible for statutory measures under the Diseases of Fish Acts 1937 and 1983 and related EC Fish Health legislation, to prevent the introduction and spread of serious pests and diseases of fish and shellfish which may affect farmed and wild stocks. All fish farms must be registered with the Department for disease control purposes. Certain diseases must be notified to the Department and there are procedures laid down for the treatment and disposal of infected stock.
12. SEERAD also has wider responsibilities in relation to the protection of fish, fisheries and the marine environment. It advises the Crown Estate on the implications for disease control, existing fishing interests and the inshore marine environment of applications for marine fish farm leases, and is consulted by SEPA on discharge consent applications. SEERAD's Fisheries Research Services carries out a wide range of marine fish farm research and offers advice on aspects of production and disease control.
13. SEERAD is the formal point of contact for statutory notifications of escapes of farmed fish. Further details can be found in paragraphs 57-60.
14. Development proposals which extend below the mean high water mark on spring tides require a licence under part II of the Food and Environmental Protection Act 1985 (FEPA), issued by SEERAD.

15. If requests are received for the Scottish Ministers to call in discharge applications for their own determination, or decisions on applications by SEPA are appealed to the Scottish Ministers, investigations to inform Ministerial decisions are undertaken by SEERAD.

The Crown Estate (CE)

16. The CE is responsible for the management of the territorial seabed and most of the foreshore between high and low water mark. Anyone wishing to establish a marine fish farm must apply to the CE for a lease of the seabed (and foreshore where appropriate) within which the marine fish farm will operate. The CE monitors marine fish farm operations to ensure compliance with lease conditions. It also maintains a register of marine fish farm leases and is able to supply non-commercial information on request. The CE is a competent authority under the Conservation (Natural habitats, &c.) Regulations 1994.

The Scottish Executive Development Department (SEDD)

17. SEDD:Transport Division has responsibility for ensuring that works in tidal waters do not constitute a hazard to navigation. Under the Coast Protection Act 1949, consent for the installation of marine fish farming equipment in sea areas must be obtained from SEDD. SEDD:Transport Division is also responsible for trunk roads and may need to be consulted where access to trunk roads is required.
18. In addition, SEDD:Planning publishes National Planning Policy Guidelines and Planning Advice Notes on a number of issues relevant to landward development. These documents may be material considerations for planning authorities when they are formulating policies in their development plans or deciding on particular planning applications on land. SEDD:Planning also process appeals against marine works licences submitted under both the Orkney and Zetland County Council Acts 1974. Certain types of development (defined in Circular SODD 4/1997: *Notification of Planning Applications*) may be notified to SEDD:Planning and can be called-in for decision by the Scottish Ministers. The Circular describes the categories of development which must be notified and these include developments affecting trunk roads or affecting national environmental designations. Copies of NPPGs, PANs and Circulars are available from the Scottish Executive website at www.scotland.gov/planning.

Scottish Environment Protection Agency (SEPA)

19. SEPA has a duty to promote the cleanliness of Scotland's tidal waters and to conserve so far as practicable, its water resources. SEPA is also required to promote the conservation of flora and fauna dependent on the aquatic environment. This includes the safeguarding of water quality and the condition of the seabed in the vicinity of fish farms. SEPA must have regard for the social and economic needs of areas, particularly those of rural areas and take account of costs and benefits in the application of its powers. Under the Control of Pollution Act 1974, consent is required for the discharge of effluent from marine fish farms to coastal waters from SEPA. An application for discharge consent is advertised by SEPA in the appropriate local newspaper and the Edinburgh Gazette. SEPA consults other regulatory authorities and is a relevant and competent authority under the Conservation (natural habitats and conservation) Regulations 1994. If SEPA is minded to agree to the discharge, it will inform any objector who can then have 21 days within which to request the Scottish Ministers to call-in the

application for their own determination. Conditions designed to prevent, minimise, remedy or mitigate adverse environmental effects may be attached to discharge consents. SEPA is responsible for ensuring that appropriate monitoring of the aquatic environment is undertaken and this is achieved by applying specific consent conditions and by its own audit monitoring. Consents may be subject to a review after a period of 4 years, or sooner with the agreement of the discharger.

Planning Authorities

20. Planning authorities have the lead role in advising the Crown Estate on marine fish farm proposals under the interim arrangements. They prepare statutory development plans that provide the basis for making decisions about planning applications on land. These may include the landward developments needed to support offshore operations, or freshwater farms, which are currently subject to planning control. National Planning Policy Guideline 13: *Coastal Planning* notes that in areas where the potential for new or expanded fin and shellfish farms is recognised, planning authorities should consider the preparation of non-statutory Framework Plans, which would guide the location of new off- and on- shore facilities. It also notes that the involvement of the industry as well as local and environmental interests in the preparation of these Framework Plans is essential.

Harbour Authorities

21. Harbour authorities, in designated harbour areas, issue licences for the operation of marine fish farms. Applications for works licences require to be advertised and are subject to consultation procedures. Applicants should consult their local harbour authority on the particular procedures that apply.

The Health and Safety Executive (HSE)

22. Under the terms of the Health and Safety at Work Act 1974, HSE inspect installations and facilities at marine fish farms. HSE has issued advice on minimum health and safety standards for the construction and use of floating fish farm installations used for finfish in inshore waters.

Shetland and Orkney Islands Councils

23. In Shetland, under the Zetland County Council Act 1974, the Council has powers to licence works in coastal waters, which it exercises in conjunction with its powers as planning authority. Under these powers, the Council has developed policies for the development and regulation of salmon and shellfish farming. Anyone wishing to undertake marine fish farm development within the Shetland coastal waters must obtain a works licence from the Council. Applicants and objectors enjoy the right of appeal to Scottish Ministers against the Council's decision. Under the Orkney County Council Act 1974, the Council exercises works licensing powers within certain designated harbour areas. In the event a Works licence is granted the applicant must also apply to the Crown Estate for a lease in the usual manner.

Scottish Natural Heritage (SNH)

24. Scottish Natural Heritage is responsible for securing the conservation and enhancement of the natural heritage - wildlife, habitats and landscapes - and for promoting its understanding and enjoyment by the public. In addition the Natural Heritage (Scotland) Act 1991 states that SNH "shall have regard to the desirability of ensuring that anything done, whether by SNH or any other person in relation to the natural heritage of Scotland is undertaken in a manner which is sustainable".
25. When consulted on aquaculture applications, SNH takes into account the proximity to and potential impact on wildlife, habitats and landscape. The factors considered, in no order of priority, include:
- areas designated for natural heritage purposes, such as SACs, SPAs, NSAs, SSSIs and NNRs;
 - areas such as Marine Consultation Areas which, although not designated, deserve particular distinction in respect to the quality and sensitivity of their marine environment and where the scientific information available substantiates their nature conservation importance;
 - direct or indirect impacts upon biodiversity, protected under the UK Biodiversity Action Plan;
 - possible conflicts with potential predator species arising from proximity to seal haul-out areas, and otter and fish-eating bird populations;
 - the risk of introducing alien species and the likely consequences for wild animal and plant communities;
 - the risk of genetic contamination of native stocks, particularly of Atlantic salmon;
 - impacts upon the character and special qualities of Scotland's landscapes, and their enjoyment, including potential impact on wild land.
 - Impacts on the general environmental quality and amenity of water bodies.

District Salmon Fishery Boards

26. Salmon fisheries management in Scotland has been devolved to district salmon fishery boards under the terms of the Salmon Act 1986. These boards may do such acts, execute such works and incur such expenses as may appear to them to be expedient for the protection or improvement of salmon fisheries, the increase of salmon and the stocking of the waters of the district with salmon. In order to fulfil their functions, they may appoint a clerk and water bailiffs. It is an offence for a person intentionally to introduce salmon or salmon eggs into inland waters in a salmon fishery district for which there is a board, unless he/she has the written permission of the board, or the waters constitute a fish farm within the meaning of the Diseases of Fish Act 1937, as amended.

West Coast Fisheries Trusts

27. A number of Fisheries Trusts, which are charitable organisations, have been set up to promote and undertake research to provide scientific advice on the fisheries resources particularly in the west and north of Scotland. The Trustees are drawn from, among others, local owners of fishing rights and the fish farming industry.

Support is provided by a number of organisations including SNH, SEPA and the Scottish Executive through the FRS Freshwater Fisheries Laboratory, Pitlochry.

Ministry of Defence

28. Fish farming is one of a number of activities excluded under bylaws from Ministry of Defence controlled areas that are used extensively by the UK, NATO and Allied nations for training purposes. The most significant of these areas include the Dockyard Ports of The Gareloch, Loch Long, Loch Goil and Rosyth. Similar prohibitions also exist at the British Underwater Test and Evaluation Centre (BUTEC) and the Rona Noise Range. Details of these prohibited areas can be found in the relevant sections of the West of Scotland Pilot and are normally indicated on the large scale Admiralty Charts. In addition Minelaying and Minehunting operations around military facilities on the west coast and the presence of submarine exercise areas militate against the provision of fish farm moorings in some areas. It is therefore important that MOD is consulted to ensure that fish farm developments do not constitute a hazard to navigation.

Operational requirements and constraints on development

29. The basic operational requirements of the marine fish farming industry are high water quality; relative shelter; suitable depth, temperature and salinity; and adequate access, infrastructure and security.
30. Environmental and servicing considerations and the need to safeguard the interests of other users of coastal waters inevitably impose locational constraints on marine fish farm developments. Factors which require to be taken into account in determining the acceptability of individual development proposals, in no order of priority, include:
- the potential effects, individually or cumulatively, on water quality, ecology, landscape character and visual amenity;
 - the availability of any necessary infrastructure;
 - the implications for fishing and recreational interests, and the socio-economic implications of any such impacts;
 - the potential for adverse and cumulative interactions with existing aquaculture developments; and
 - the need to ensure that offshore installations will not constitute a hazard to navigation.
31. Environmental and infrastructural capacity constraints cannot be determined in isolation. The cumulative effects of development require to be considered.

The Water

32. Unpolluted and well-oxygenated water is essential for the culture of marine fish, salmonids and shellfish. Aquatic organisms have differing optimum water temperatures for growth. Large seasonal fluctuations in temperature can adversely affect both fin and shellfish species. Water temperatures on Scotland's Atlantic coast are higher and more stable than at similar latitudes elsewhere because of the effect of the North Atlantic drift. Sheltered, shallow situations,

where water temperatures may become elevated during the summer months, can be particularly attractive locations for shellfish cultivation. However, sites where the tidal flushing is poor enough to permit elevated temperatures may be prone to low oxygen levels, low salinity, low natural food levels and poor dispersion of waste.

33. In shallow inner sea lochs and inlets which receive substantial discharges of freshwater, salinities are liable to drop below the optimum for marine aquaculture. Salmon and shellfish farming both require relatively high and stable salinities. Low salinities result in reduced salmon growth rates. Scallops are particularly sensitive to low salinities and many west coast sites are unsuitable for their cultivation because of low salinities during winter.
34. Intensive fish husbandry that uses an external food source has the potential to alter the water chemistry in and around production sites. There is a risk that the water could become enriched in nutrients. The ecological consequences of excessive nutrient enrichment can include increased production of phytoplankton and other primary producers, and changes in the composition of aquatic plant and animal communities. In some locations, it will be appropriate to consider nutrient loading from aquaculture in the context of other anthropogenic sources such as agricultural run-off and sewage inputs from towns and villages.
35. Sustainable marine fish farming requires that the levels of nutrient and chemical inputs be not allowed to exceed the assimilative capacity of the surrounding aquatic environment. There is clearly a need to ensure that, within a body of water, the total nutrient input from fish farming and other sources does not exceed the threshold above which an unacceptable increase in phytoplankton production, undesirable changes in species composition or impacts on valued biodiversity might occur. To address this risk the Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters 2002 includes an assessment of the nutrient load from existing fish farm operations flagging up areas where a precautionary approach is warranted. Under EC Directive 91/492, which lays down stringent health conditions for the production and marketing of bivalve molluscs, shellfish harvesting areas have been classified according to the level of bacterial contamination present in samples of mollusc flesh. Advice on the conditions that apply in the various categories of this classification can be obtained from SEERAD FRS Marine laboratory.
36. As with all livestock farming activities, good husbandry/welfare practice necessitates the occasional use of medicines to treat diseases including parasitic infections. These compounds are potentially toxic to other marine life and safe environmental concentrations or environmental quality standards (EQS) have been established to ensure that concentrations remain well below the level at which adverse ecological effects are detectable. As conventional cage-rearing techniques provide no practical means of treating residues before these are discharged to the surrounding waters the industry must rely on natural dispersion and breakdown to render these harmless. Discharge consent conditions are imposed by SEPA to limit the quantity or rate of release to ensure the EQS is met for each compound. Advice on these standards and how they are applied can be obtained from SEPA and SEERAD FRS Marine Laboratory. Further research looking for any subtle and long-term effects of these compounds is being carried out by a consortium lead by the Dunstaffnage Marine Laboratory.
37. Where organic waste accumulates in bottom sediments beneath fish cages, microbial activity may result in depletion of dissolved oxygen in the overlying water. Organic enrichment also results in changes in the bottom-dwelling flora and fauna, though the effects are generally confined to the immediate vicinity of

the cages. Excessive enrichment of the sediment can result in "site souring" where the natural bio-degradation processes within the sediment become overwhelmed gas production may adversely affect the farmed fish. It is therefore necessary to limit the biomass of fish to match the dispersive characteristics of the site and prevent loading of solid waste organic matter on the seabed which exceeds this assimilative capacity. This forms part of the assessment carried out by SEPA when determining consent applications or reviewing existing consents. Although shellfish cultivation relies on a naturally occurring food source, the material discarded by filter-feeding molluscs can result in localised accumulations of organically rich detritus on bottom sediments beneath shellfish farms. However, these deposits are generally considered to have an insignificant environmental risk.

38. Particularly in inshore marine locations, it is important to select sites with good water exchange characteristics. Strong currents, for example from tidal flushing, disperse waste material, bring in replacement, well-oxygenated water and, in the case of shellfish cultivation, provide fresh supplies of planktonic food. Sites in more exposed locations with deeper water are less susceptible to souring as a result of the accumulation of waste material, and generally have more stable salinities. Good quality seabed survey data are essential in marine site selection. Sites with thick, muddy sediments tend to have less vigorous water exchange characteristics. Sand and gravel sediments indicate that the site is well flushed.
39. Directive 79/923 sets standards for the quality of water in designated 'shellfish waters'. Practically all sustainable Scottish shellfish farming is carried on in these areas. Details of areas currently designated as shellfish waters in Scotland can be found in Annex B.

Natural Heritage

40. Scotland's varied coastline, particularly the west and north west mainland and islands, provides a wide range of important habitats for wildlife as well as landscapes of the international reputation for their scenic quality and recreational value. Landscapes of national importance have been designated as National Scenic Areas. Many other coastal areas are valued for the character of their landscapes and some also for their wild and remote qualities. Landscapes of regional and local importance can also be designated by local authorities and are identified in development plans. NPPG 13: *Coastal Planning* identifies three types of coast - developed, undeveloped and isolated - as the basis for policy on coastal development. Advice on the criteria to be used in classifying the coast is set out in PAN 53: *Classifying the Coast for Planning Purposes*. More detail on development siting and design can be found starting at paragraph 78.
41. Some of the potential effects of marine fish farming on flora and fauna have already been outlined previously. Other considerations include interactions with predator species; disturbance to wildlife such as seabirds, herons, seals and otters and interaction with wild stocks of salmon and sea trout (see below) and shellfish populations.
42. Terrestrial and coastal sites of national significance for nature conservation enjoy statutory protection as Sites of Special Scientific Interest (SSSIs). Some of these are also managed as National Nature Reserves (NNRs). In due course sites on land or sea, which are of international significance, will receive protection under EC legislation or international agreement. A number of sites of particular importance for bird populations have been designated as Special Protection Areas (SPAs) under EC Directive 79/409 on the conservation of wild birds (the

Wild Birds Directive). Directive 92/43 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) requires member states to identify sites for designation as Special Areas of Conservation (SACs). Wetlands of international importance as waterfowl habitats are protected under the Ramsar Convention.

43. The Wildlife and Countryside Act 1981 makes provision for important marine habitats to be designated as Marine Nature Reserves (MNRs). There are no MNRs in Scotland at present. In addition, 29 Marine Consultation Areas (MCAs) have been identified, to assist bodies that consult SNH on marine conservation issues. While the latter identify marine habitats of particular quality, value and sensitivity, they do not have any statutory status. The UK Biodiversity Action Plan identified species and habitats requiring special provisions and a co-ordinated approach to management from different partners. Some of these species and habitats are sensitive to aquaculture operations.
44. Particular care must be taken to minimise the potential for adverse interactions with predator species. The attentions of predators can result in serious stock losses, and conversely, predatory birds and mammals may be drowned as a result of becoming entangled in anti-predator nets. The industry and nature conservation organisations have agreed codes of practice in relation to the interaction between fish farming and predatory wildlife.

Wild salmon and sea trout

45. Scotland's wild salmon and sea trout stocks are a unique and irreplaceable biological resource of considerable economic and social value. The populations of wild fish in the catchments of many salmon and sea trout rivers are believed to be genetically distinct even to the extent of differentiation to individual tributaries and headwaters. The fisheries that they support make an important contribution to Scotland's rural economy and are a valued part of the country's cultural heritage.
46. Salmon and sea trout fishing and conservation interests are concerned about the potential effects of commercial salmon farming on wild stocks. The successful cross-breeding with escaped farmed fish may reduce the genetic diversity and vigour of wild salmon and sea trout populations. Fears have also been expressed about the transmission of disease and parasites from farmed to wild fish though this is potentially equally applicable in reverse.
47. In this context, proposals for the establishment of hatcheries, smolt and salmon/seatrout farms in the catchments and coastal waters associated with Scotland's principal salmon and sea trout rivers may prove to be particularly contentious and difficult to determine.
48. The Atlantic salmon is an Annex II and V species under the Habitats Directive. In addition, wild salmonids act as hosts for the young larval stages of the freshwater pearl mussel (also protected under Annex II). In areas where freshwater pearl mussels are found, any activities that threaten wild salmon and sea trout populations may therefore also pose a threat to pearl mussel populations. Under the EC Habitats Directive, Government has a European and UK legal obligation to ensure the favourable conservation status of natural habitats and species identified as of Community interest within the Directive. This applies in particular to interests within designated sites.

Other interests

Fishing

49. Care must be taken to minimise the potential for conflict between marine fish farming and local fishing interests. Inshore fishing is an important source of livelihood in many coastal areas. The effects of development on traditional fishing grounds, salmon netting stations and angling interests require to be carefully considered. Advice on fishing interests can be obtained from SEERAD, the Scottish Fishermen's Federation, District Salmon Fishery Boards and local fishermen's organisations. The Salmon Net Fishing Association of Scotland can provide advice in relation to salmon net fishing stations.
50. A Several Order is a type of Fishery Order granted by Scottish Ministers under the Sea Fisheries (Shellfish) Act 1967 (as amended), where an exclusive right to fish is granted to the person or body applying, covering a named species, in a defined area for a specified time limit. Any unauthorised disturbance or injury of the shellfish or their beds is an offence. The offender is liable to make full compensation for the damage or loss caused by the unlawful act. There are currently eight such Orders in Scottish waters. Further details can be obtained by contacting SEERAD: Inshore Fisheries on 0131 244 6383.

Navigation

51. It is essential to ensure that marine fish farm development does not constitute a hazard to navigation. Care must also be taken to safeguard established anchorages and harbours of refuge: this can best be achieved by avoiding areas marked by anchor symbols on Admiralty Charts and by reference to the Clyde Cruising Club Sailing Directions. It is important from a safety perspective that sites being fallowed are clearly marked to protect navigation routes.

Recreation

52. Coastal areas are used by a wide and growing range of recreational interests and water-based recreational activities make an important contribution to the economies of many rural communities. These activities include sailing, canoeing, windsurfing, water-skiing, swimming, sub-aqua diving, surfing, recreational fishing and the general enjoyment of the coast. Due attention must be given to public safety considerations and care should be taken to avoid impeding access to the foreshore for recreational purposes. Where appropriate, consideration should be given to the scope for providing joint access for fish farming and recreational activities. Sport Scotland (formerly the Scottish Sports Council) can provide advice in relation to interactions with recreational activities and is a point of contact for all sports governing bodies.

Physical Requirements

Shorebases

53. It is essential to ensure that adequate arrangements can be made for servicing offshore sites. Finfish farms in particular have substantial servicing requirements. Onshore sites are likely to be required as bases for servicing, purification, processing and maintenance operations and the storage of supplies and

equipment. While it may be possible to locate some servicing facilities offshore, the location of huts or similar structures on offshore equipment is generally undesirable, as they are liable to be visually obtrusive. All shore-based structures are likely to require Building Warrants and Planning Consents. Planning applications are expected to conform to the Structure and Local plan policies for the area. In all cases, appropriate arrangements need to be made with the local authority, in terms of their responsibilities under the Animal By-products Order 1999, for the safe disposal of dead and diseased fish and offal. Any waste-generating operations such as net cleaning are likely to be attached as conditions of planning consent after consultation with SEPA.

Roads

54. The traffic generated by finfish farms can put considerable pressure on rural roads and the consequential wear and tear has implications for the maintenance budgets of road authorities. Planning permission for onshore facilities may be refused if the capacity of local roads is insufficient to accommodate service traffic. Ways in which such difficulties can be overcome where practicable include more transport of feed and harvested fish by sea or rail rather than road.

Accommodation

55. The availability of housing for employees may be an important consideration. Suitable accommodation is scarce in many parts of rural Scotland. Reasonable proximity between marine fish farming sites, service bases and staff accommodation is desirable on logistical grounds. The location of equipment and facilities within sight of occupied accommodation may be desirable for security reasons. Details of anticipated housing requirements and security considerations should be included within the initial development proposal. Planning permission for the development of onshore facilities does not imply that permission for a related housing development will automatically be forthcoming, and such a decision is likely to be based on the relevant structure and local plan policies for the area.

Husbandry and Management

Disease and Parasite Transfer

56. Disease can be transferred horizontally by fish coming into physical contact with each other, or with contaminated material, such as fish farm equipment. Pathogens may also be transmitted by vectors, such as sea birds, or through the water medium. The transport of micro-organisms in coastal waters depends on local circulation patterns, which may be highly variable. It can therefore be difficult to predict the fate of pathogens entering the water column at a known source location.

Containment

57. In recent years, there has been a rising interest and concern about the number of farmed fish escapes and their possible impact on wild stocks. These concerns largely focus on the fact that escaped fish may occupy valuable habitat to the exclusion of wild fish, interbreed with wild fish, threatening the genetic purity of local stocks, and represent a disease hazard. This has led to the introduction of a statutory requirement, through amendment of the Registration of Fish Farming and Shellfish Farming Businesses Order 1985, for fish farmers to notify Scottish Ministers of escapes and suspected escapes from fish farms. A working group on farmed fish escapes established by the Scottish Executive to review the situation in Scotland concluded that there would always be circumstances (extreme weather) which would result in escapes, that recapture efforts were likely to have a limited effect and that the main focus should always be on secure containment. Its main recommendations were:
- site-specific containment measures and contingency plans should be an integral requirement of the environmental assessment process;
 - notification of escapes should be a statutory requirement;
 - the Scottish Executive should put in place arrangements for the authorisation of emergency use of nets; and
 - The industry should ensure that nets are provided on a local basis and that the costs for dealing with an escape should be borne by the farm.
58. Site specific contingency plans are now required in support of **all** finfish farm applications. Further guidance on the legislative requirement can be found in "What to do in the Event of an Escape of Fish from a Fish Farm".
59. The main causes of escapes from fish farms are storm damage, predator attack, and production operations and operator error. It is imperative, therefore, that the equipment, materials, structures and production operations employed are designed, manufactured, installed and/or maintained in such a way as to minimise the risk of escapes. Assessment of suitability can include:
- A review of the likely weather extremes (wave heights, current flow, tidal velocities, etc.) experienced on site, in relation to the cages and moorings,
 - Proposed net maintenance regimes,
 - Proposed anti-predator strategies for the site, and
 - A review of the main operational activities on site.
60. Further guidance on containment can be found in the industry Code of Practice: "A Code of Practice on the Containment of Farmed Fish, Official Notification Following the Escape of Fish, and Possible Measures to be Employed to Attempt Recapture", available from industry organisations' websites.

Separation

61. In inshore areas the maintenance of adequate separation distances will greatly reduce the risk of interactions between marine fish farms and the potential for conflict with other interests. The indicative separation distances introduced by the Crown Estate some 13 years ago were necessarily arbitrary, without a sound scientific basis. Indeed, in order to minimise adverse interactions between neighbouring farms, a separation distance in the region of 14km would be required for areas with tidal velocities of one knot. In practice, many farms are now well within this distance. Therefore, the emphasis should lie with area-wide

mitigation of disease interactions such as inter-site production management agreements and maintenance of disease firebreaks, rather than solely on a site-specific basis.

62. In all cases a careful assessment of hydrography, topography and local interests will be necessary. It is not currently possible to provide meaningful advice in respect of separation distances from rivers hosting freshwater pearl mussel, salmon and sea trout populations as local factors will vary between sites. However, local authorities should bear in mind the need to protect freshwater biodiversity when considering applications in close proximity to mouths of such rivers.

Fallowing & Management Agreements

63. The marine phase of salmon farming generally operates on an 18-24 month production cycle and to break potential disease cycles or prevent site souring, there is a growing tendency amongst fish farmers to stock sites with a single year class of fish and to fallow sites before restocking. These practices are recommended. It should be noted that single year class stocking requires use of three or more sites in rotation, one of which would lie fallow for a year or more.
64. To minimise the risk of cross-infection and other adverse interactions between marine fish farms, close liaison between neighbouring operators is essential. The growing co-operation between salmon farmers over the siting of cages is a welcome trend within the industry. Another approach, which yields positive results where units are in relatively close proximity, is the use of management agreements between operators whereby their individual operational practices are harmonised to reduce the possibilities of adverse interaction. Experience indicates that inter-company agreements on fallowing, stocking densities, year-class separation and medication have produced mutual benefits to operators and reduced adverse environmental effects. In addition, such agreements provide associated benefits for wild fisheries and this is reflected in the growing trend of management agreements between salmon farmers and wild fisheries interests. The purpose of such agreements is to seek solutions for ensuring the maintenance of a healthy stock of wild fish whilst at the same time promoting a sustainable aquaculture industry.
65. These benefits are endorsed by the Joint Government/Industry Working Group on Infectious Salmon Anaemia established to review current practices within the fish farming industry, to identify those risks which might pose a threat in the spread of ISA and the measures to be taken to reduce those risks. The Group's report recommends the establishment of hydrographically defined management areas for the aquaculture industry, to ensure that day-to-day operations such as restocking, fallowing, disease treatment and harvesting within each area are co-ordinated in such a way as to minimise the spread of disease and sea lice within and between Management Areas. Maps of the current Management Areas can be found in Annex C. In the interests of avoiding the spread of disease from one Management Area to another, proposals for new sites that would conjoin management areas (bridge the 'firebreak') will not normally be acceptable.
66. Details of proposed management arrangements should be included in lease applications so that consideration can be given to their implications for the environment and local infrastructure.

New Species

67. The equipment, management techniques and site characteristics used for the farming of new species is currently similar to that used in the salmonid farming industry, although as the sector develops, its commercial production may be subject to different constraints.
68. Fallowing is an important tool in breaking cycles of infection and should be part of the normal process in managing on-growing sites. Finfish farmers should participate in local Management Agreements and, where possible, fallow synchronously.
69. The Aquaculture Health Joint Working Group (AHJWG) views the development of the marine finfish sector as a positive contribution to the sustainable development of the Scottish aquaculture industry. It is examining the disease risks associated with multi-species farming and its recommendations will be incorporated in a future revision of this guidance. In the meantime, applications for new-, and/or multi- species farms should be considered on their merits.
70. The release of non-native species into Scottish waters is carefully regulated to prevent ecological damage and the introduction and spread of serious pests and diseases. The introduction of exotic species into the wild requires a licence from SEERAD. Scottish Natural Heritage also has powers to control the introduction of species under the Wildlife and Countryside Act 1981 and is consulted by SEERAD before a licence is granted.

Landscape, Siting and Design

71. Three factors can make marine fish farm development sensitive:
 - the close correspondence between the best fish farm development sites and those landscapes deemed to be of national or regional importance,
 - the introduction of development for the first time to areas that were previously undeveloped, and
 - the industrial character of some fish farm installations, which may intrude upon surrounding areas.
72. Changes in husbandry may bring the development of new sites. In particular, the growing recognition of the need for fallowing will lead to pressure for additional sites in close proximity to existing shorebases. There are also signs of a need to develop and expand shorebase facilities in some locations. This is due partly to the general increase in scale of operations, and also new environmental, hygiene and health and safety requirements, e.g. for laboratories, holding tanks and improved staff facilities.

Landscape Assessment

73. In the preparation of framework plans for marine fish farming, planning authorities may undertake assessments of landscape character and visual amenity. The landscape importance of the area should be explained and reasons given for any special landscape protection. This enables regulatory bodies to take better and

more consistent decisions while, at the same time, giving the intending developer specific guidance as to the landscape constraints and issues that apply in different areas.

Identifying Landscape and Visual Impact

74. The developer should consider the landscape setting for any new development as early as possible in the site selection and lease application process. A first step should be to determine which designations apply. If it appears that any designation or other special landscapes will be affected, approaches should be made to the Crown Estate, the planning authority, and Scottish Natural Heritage, to clarify what the landscape constraints may be.
75. For sensitive sites, and particularly where a marine fish farm application requires an Environmental Impact Assessment, the developer should commission a landscape and visual impact assessment of the proposed project. This should describe:
- the character and visual amenity of the landscape affected and its value or importance;
 - the impact on visual and aesthetic characteristics;
 - the impact on landscape character and individual landscape features;
 - where the fish farm will be seen from, and how it will appear;
 - who the viewers will be;
 - the impact on the sense of wilderness that can be experienced in some areas;
 - how acceptable the changes are likely to be; and
 - any remedial measures that can be taken to reduce impact, including how potential cumulative impacts are to be avoided.
76. An initial assessment may evaluate the relative merits of alternative sites. A fuller assessment can then be undertaken for the preferred site, and can help in the identification and mitigation of landscape and visual impacts. Some of the landscape factors that should be considered in selecting an appropriate site are outlined below.

Landscape character assessment

77. Physical character, human activity, visual qualities and experience of place combine to create a landscape character that is distinct across a geographic area. One of the aims of locating and designing a development with care is to ensure that the proposal does not undermine characteristics that contribute most significantly to the landscape character of an area. Where possible, new developments should relate to the key characteristics of an area. The process by which these key characteristics are identified and assessed is called landscape character assessment.
78. A national programme of landscape character assessment has been undertaken by SNH, which now covers the whole of Scotland. Landscape Character Assessment reports (LCAs) are available from SNH.
79. The LCAs aim to provide a greater understanding of landscape character through providing information about landscape character in distinctive geographic areas. Using LCAs, potential developers should be able to identify the landscape

character type of their potential sites, and consider how their development will affect the key characteristics. LCAs also offer guidance on how development may relate to the key characteristics of an area.

80. When choosing a location, potential developers should find LCAs particularly helpful in assessing the sensitivity of different landscape character types to changes brought about by new developments and changes in land use. In addition, LCAs that cover coastal areas may offer specific advice about the siting and design of aquaculture developments in relation to coastal landscape character types.

Cumulative Impact

81. Where there are existing aquaculture facilities, both new proposals and extensions to existing developments may be difficult to accommodate within the landscape. LCAs may indicate which landscape character types cannot easily accommodate cumulative aquaculture development.
82. It may be that there are apparently no aquaculture developments near the sites being considered. The Crown Estate can provide information on both existing leases for development that may have not yet been developed, and also applications that are under consideration.
83. The impact of one well designed, perhaps relatively small-scale proposal, may be absorbed by the scale of the landscape. Sometimes a future extension or additional developments may dominate the space within which they are sited.
- Several developments together can attract more attention, creating a strong focus within the landscape.
 - Whereas one individual development may act as a landscape feature, a number of developments can create a key characteristic of the landscape, altering the landscape character.
 - When a number of developments that occupy the same loch are not coordinated in terms of siting, layout and design, the effect can be muddled and visually confusing.
 - Where a number of small inlets or bays are gradually filled up with development, the important indentations along the coastline become obscure, resulting in a change of landscape character.

Remoteness and Wild Land

84. Areas that are distant from settlements and obvious human activity often have qualities of remoteness that may be reinforced by the lack of accessibility. These qualities are increasingly rare and frequently contribute significantly to both the scenic quality and the landscape character of a place.
85. Some areas are increasingly valued because of their wild land qualities. This sometimes, but not always, coincides with a degree of remoteness, and can certainly be linked to inaccessibility. A sense of sanctuary, solitude and closeness to nature reinforce it. Wild land qualities are valued in their own right. They are engendered through the experience and perception of a place, not simply through physical separation from human settlement. LCAs may identify landscape character types that possess qualities of wild land or remote character.

86. Aquaculture development can be accessed by sea, and therefore can be proposed for relatively undeveloped areas, with little or no direct road access. The very inaccessibility of such areas may reinforce qualities that create either a sense of remoteness or wild land.
87. In such areas, SNH may well advise against the introduction of aquaculture development. This is because it is not just the visual impact of the proposal that is likely to be of concern. It is also the movement, noise of boats and generators and ongoing management activity that will affect the experience and perception of such areas.
88. Onshore facilities, access tracks and power supplies as well as water-based structures are also likely to impact upon a sense of wildness. It may be that in some cases, the water based element of a proposal can be accommodated, whilst road access or a shore base cannot without unacceptable adverse impacts.
89. Any developer considering locating structures in an area of remote or wild land character should contact the Planning Authority and SNH at an early stage.

Visual Impact

90. Structures in and on the water are often very visible due to:
- the contrast in texture between the cages or lines and the smooth, reflective surface of the water, particularly in calm weather;
 - the contrast between the vertical sides of cages and infrastructure and the flat water surface;
 - the constant changes in light conditions which one moment can cast a structure into shadow, and the next reflect bright light upon it;
 - the changes in sea colour and tone which can often camouflage the structures one moment, but then emphasize the structure in dramatic contrast the next;
 - the contrast between the often very regular and geometric shape and alignment of cages or lines and the more organic shape of the landform and coastline.
91. As a result, water based development will often be difficult to miss, reinforcing the need to choose an appropriate location. This does not mean that structures should always be removed from view, but an assessment of visual impact should be an integral stage of choosing a preferred location for development. To do this, the extent of visibility of potential locations for both water based and, if necessary, onshore facilities should be identified using maps and site survey.
92. The impact of potential onshore and water-based developments from significant viewpoints should also be considered. Significant viewpoints include:
- views from a popular road or a route promoted as a tourist attraction;
 - established settlements;
 - well used vantage points;
 - coastal footpaths;
 - popular ferry routes;

- sites or villages of historic, architectural or cultural importance where the setting is important for visitor experience.
93. In some circumstances it may be inappropriate to locate any development within sight of a significant viewpoint. This can only be determined on an individual case basis. If in doubt, potential developers should consult with the Planning Authority, SNH or Historic Scotland as appropriate at an early stage.
94. When choosing a location for development, a developer should consider, and where necessary obtain advice from the Crown Estate, on the process by which the need for an Environmental Impact Assessment (EIA) may be established. It is likely that any significant adverse impacts on landscape associated with the location of a development will lead to a request for an EIA.
95. Guidance on the preparation of an EIA can be found in the publication 'Environmental Assessment Guidance Manual for Marine Salmon Farmers', available from the Crown Estate.

Siting and Design

96. Once the general location of a new marine fish farm has been determined and the key landscape and visual issues have been identified, attention turns to more detailed siting and design considerations. Ideally, the developer should:
- open discussions with the Crown Estate, the planning authority, and Scottish Natural Heritage;
 - take professional landscape advice, especially for developments within sensitive, designated landscapes; and
 - prepare plans showing the location, extent, size and appearance of all associated development, on both land and water.
97. Further guidance on the siting and design of marine aquaculture developments can be found in "Marine Aquaculture and the Landscape: The siting and design of marine aquaculture developments in the landscape" by SNH, CEC and Scottish Quality Salmon, 2000.

Water-based Development

98. On the water, marine fish farm structures can include cages, rafts, pontoons, jetties, nets, food storage and feeding structures including feed barges, mooring and navigation buoys, longlines and lighting. Layout and scale should reflect the local landform and coastal configuration, for example, emphasising a headland or spur or mimicking coastal skerries. In general, an irregular pattern, with cage groups of variable size, suits a complex coastline, while a compact or linear pattern suits a simple coastline. The existence of permanently moored feed barges (especially when empty and riding high in the water) can increase the visibility of a development considerably and their use and siting will need to be very carefully considered.
99. Where the shore is comparatively flat, the main views are low level ones and distance and backdrop become the most important factors. In these circumstances, the least visible sites will be those located far from the shore, preferably against a backdrop of land. Better still, they may be hidden behind headlands or islands. Wherever the loch shore is steeply sloping and there are

high level views, the site may be obscured by siting it close inshore, where views are blocked by the shore itself or by tree cover. New or existing tree planting may also afford screening, although the scope here is often more limited, given the open and exposed character of many coastal landscapes in Scotland.

100. In attempting to satisfy visual amenity considerations, in some cases conflict may arise with respect to dispersal of wastes and pollution prevention, and a judgement based on balancing the relative impacts will be necessary.

Land-based Development

101. On land, marine fish farm structures include jetties, offices and stores, hatcheries, net drying and cleaning equipment, shore-based feeding systems and outdoor tanks. Good sites are often in hollows or enclosed bays, sheltered and screened by existing vegetation. Wherever possible, it is wise to:

- avoid roadside development;
- avoid skyline sites, which can have an impact over a wide area, instead using hillsides and woodland as a backcloth;
- use redundant buildings; and
- avoid popular marine routes, such as regular ferry routes.

102. In addition, any direct damage to existing features of landscape interest such as woodlands, cliffs or beaches, should be avoided.

103. Any new buildings should relate well to the landform - for example, they may lie parallel with the contours and be set into the hillside to reduce visibility from both land and water. Similarly, access roads, parking and working areas should be sensitively handled. Levelling and ground-modelling should be kept to a minimum.

104. When considering locations for marine water tank farms, use should be made of available screening, as they often have an industrial character, which is intrusive in coastal areas. If no existing cover is available, new planting should be considered and may need to be extensive. Another option is to set the tanks into the ground, or construct peripheral screening mounds. However, such sites are often exposed because they are sited next to the foreshore. The best screening option is usually to set tanks or buildings as low as possible, taking advantage of any topographic screening afforded by headlands, steeply shelving slopes, and roadside walls or hedges.

Designing Facilities

105. In general:
- avoid tall and complex structures in open settings, instead choosing simple low-profile structures wherever possible;
 - select equipment that utilises dark, subdued, non-reflective colours and materials rather than light, bright and reflective ones;
 - avoid a jumble of different shapes and colours of equipment on a single site - aiming instead for neatness and uniformity; and
 - choose building designs that are similar in scale, proportions, colour and materials to those used in traditional local architecture.

106. Many sites will benefit from the following landscape mitigation works and this will be especially important in sensitive scenic and tourist areas:
- careful design of access roads;
 - creation of parking, storage and outdoor working areas screened from public view;
 - grading, seeding and reinstatement of areas disturbed by construction works;
 - planting to create new tree belts or reinforce existing woodlands both on and off-site; and
 - sensitive boundary treatments.
107. When devising planting schemes site specific advice on the appropriate vegetation should be sought from the local SNH office and local authority, where the aim, should be to create natural/semi-natural habitats in line with, for example, the local biodiversity action plan (LBAP). In any event, look at what already grows successfully in the locality and take care to choose species that are tolerant of salt winds and exposure.
108. Marine fish farms often attract considerable interest from the public and it may be worth considering at least limited visitor provision at sites near popular tourist attractions. This can help direct visitors away from operational areas where they may bring security or disease risks. A few sites may have potential as tourist attractions in their own right, requiring special visitor facilities, but in the majority of cases simple low-key provision will be more appropriate.

Operation and Management

109. Day-to-day operations and management are also important considerations. It should be remembered that even the most sheltered and well-screened site is visible from the water; and that the foreshore, where most marine fish farming activity takes place, is often a focus for recreational activity too.
110. There is scope on almost every marine fish farm to improve appearance through better site management and where necessary through a programme of visual improvements. Much can be achieved through common sense measures at comparatively low cost.
111. At some sites, the most visible feature from a distance is vehicles and parking, which may include staff and company vehicles, forklift trucks and other lifting gear. Consideration should be given to parking provision during site planning.
112. Where new tree planting has been undertaken, its success will often depend upon subsequent maintenance. Similarly, where existing woodland provides a framework or screen, its long-term management is essential if the screen is to be effective.
113. If all or part of a marine fish farm should cease operation, all disused equipment on both dry land and the seabed, in the water column and on the surface should be removed as soon as possible. The conditions attached to seabed leases will normally include a decommissioning requirement.

Note

114. Enquiries about this advice should be addressed to Laura Cregan (0131 244 8249), SEERAD, Room 401 Pentland House, 47 Robb's Loan, EDINBURGH, EH14 1TY. The guidance is available on the Scottish Executive website, and further copies can be obtained from Liz Moir (0131 244 6224).

ANNEX A: USEFUL CONTACTS

Crown Estate

10 Charlotte Square,
Edinburgh
EH2 4DR
Tel: 0131 226 7241
Fax: 0131 220 1366
E-mail: cescotland@crownestate.co.uk

SEERAD Freshwater Fisheries, Aquaculture & Marine Environment

Pentland House
47 Robb's Loan
Edinburgh
EH14 1TY
Tel: 0131 244 6175
Fax: 0131 244 6512
E-mail: chris.sinclair2@scotland.gsi.gov.uk

SEERAD Countryside and Natural Heritage

Victoria Quay
Edinburgh
EH6 6QQ
Tel: 0131 244 6550
Fax: 0131 244 4071
E-mail: sarah.conlon@scotland.gsi.gov.uk

SEERAD Air Climate & Engineering Unit (Environmental Appeals)

Victoria Quay
Edinburgh
EH6 6QQ
Tel: 0131 244 0204
Fax: 0131 244 0211
E-mail: guy.winter@scotland.gsi.gov.uk

SEDD Planning

Victoria Quay
Edinburgh
EH6 6QQ
Tel: 0131 244 7066
Fax: 0131 244 7083
E-mail: donna.mclean@scotland.gsi.gov.uk

SEDD Transport Division

Victoria Quay
Edinburgh
EH6 6QQ
Tel: 0131 556 8400
E-mail: ceu@scotland.gov.uk

Ministry of Defence

The Queen's Harbour Master
Renown Building
HM Naval Base Clyde
Faslane
Helensburgh
G84 8HL
E-mail: public@ministers.mod.uk

Fisheries Research Services

Marine Laboratory
PO Box 101
375 Victoria Road
Aberdeen AB11 9DB
Tel: 01224 876544
Fax: 01224 295511
Internet: www.marlab.ac.uk

Scottish Natural Heritage

12 Hope Terrace
Edinburgh
EH9 2AS
Tel: 0131 447 4784
Fax: 0131 446 2278
Internet: www.snh.org.uk

Scottish Environment Protection Agency

Erskine Court
The Castle Business Park
Stirling
FK9 4TR
Tel: 01786 457 700
Fax: 01786 446 885
Internet: www.sepa.org.uk

Health and Safety Executive

Belford House
29 Belford Road
Edinburgh
EH4
Tel: 08701 545 500
Fax: 02920 859 260
E-mail: hseinformationservices@natbrit.com

Association of Salmon Fishery Boards

5A, Lennox Street
Edinburgh. EH4 1QB
Tel: 0131 343 2433

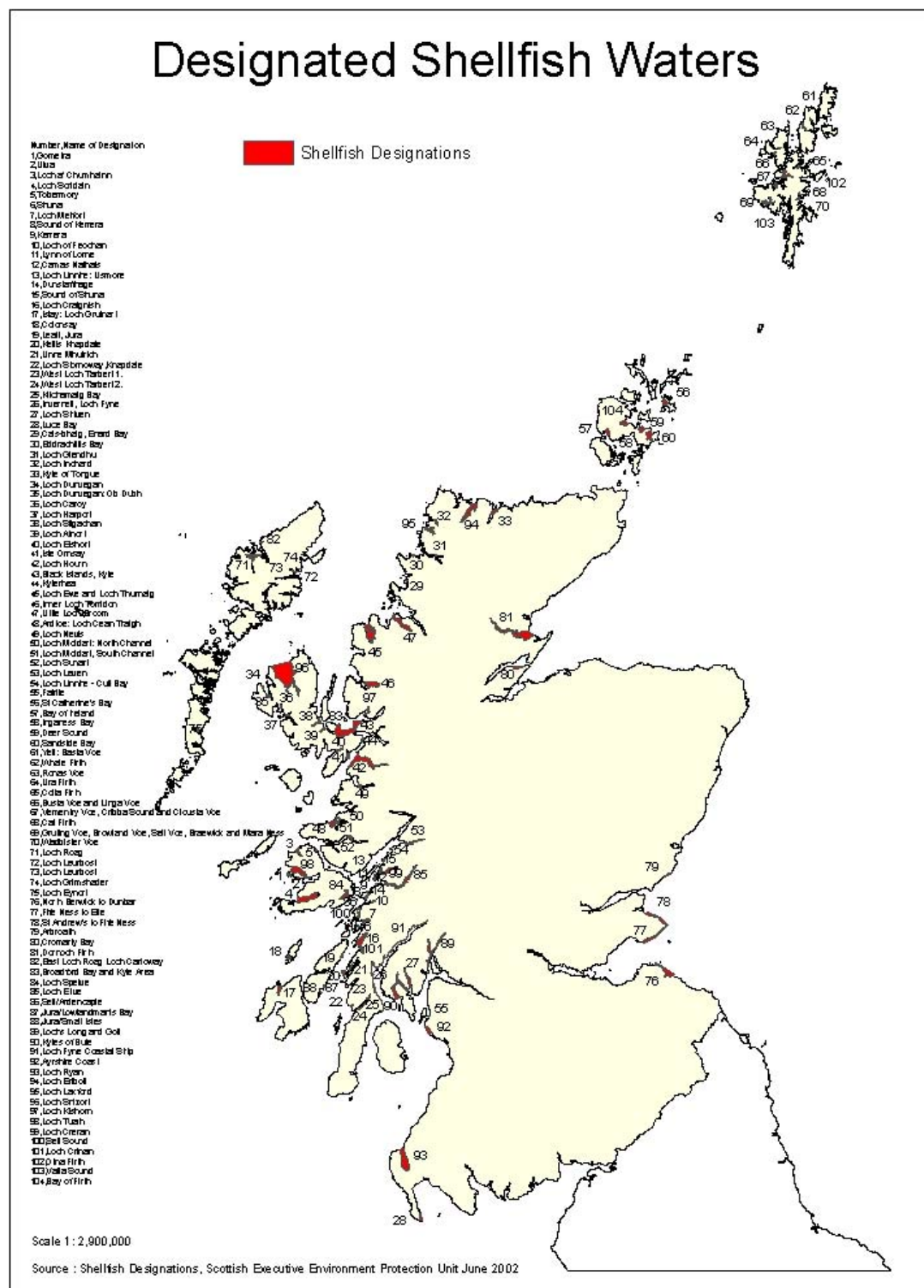
Association of West Coast Fisheries Trusts

25 Scotland Street

Edinburgh
EH3 6PY
Tel: 01520 733300
Fax: 01520 733262
E-mail: kishorn@invcoll.freeseve.co.uk

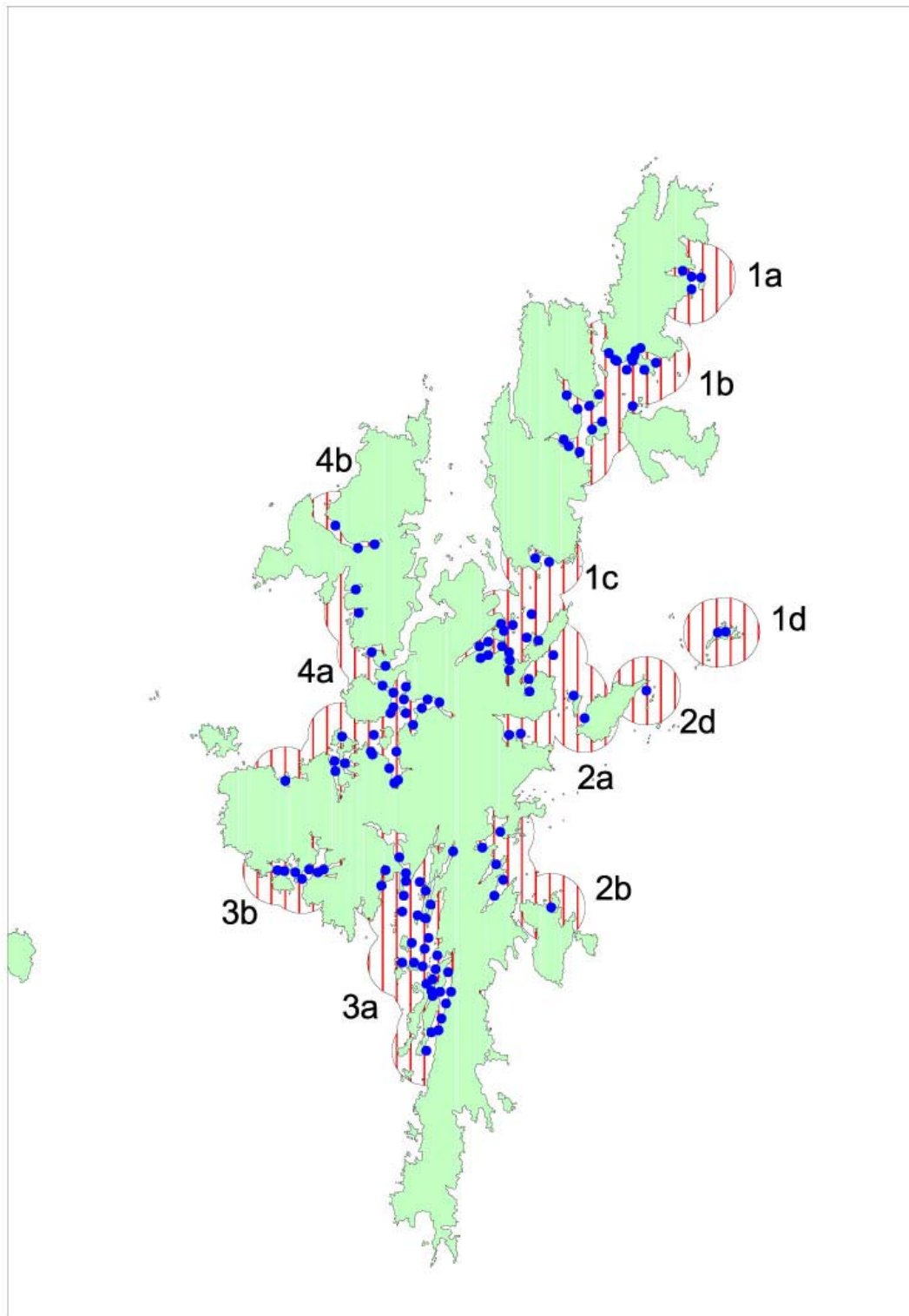
Sea Fish Industry Authority
Marine Farming Unit
Ardtoe
Acharacle
Argyll PH36 4LD

ANNEX B: DESIGNATED SHELLFISH WATERS

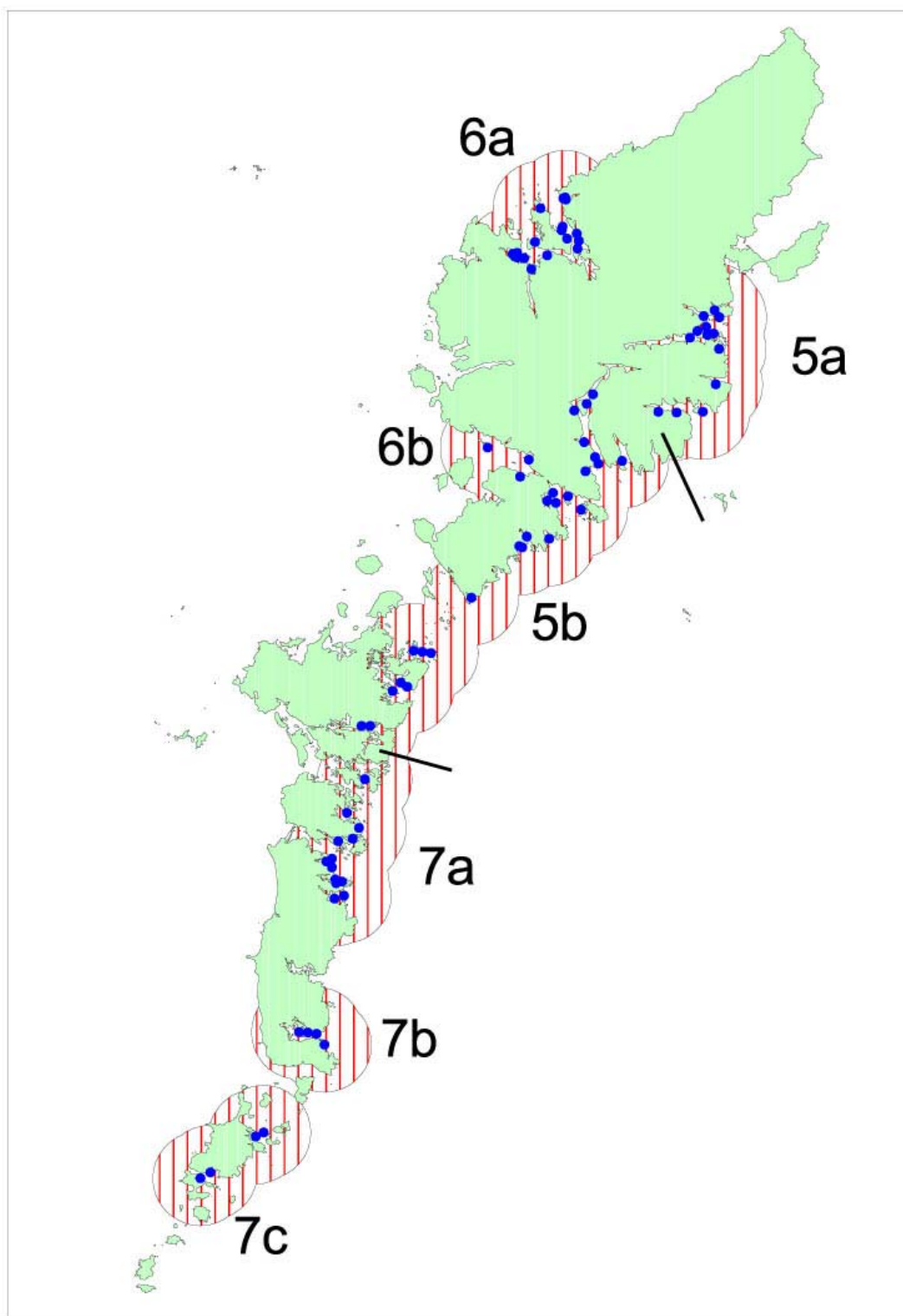


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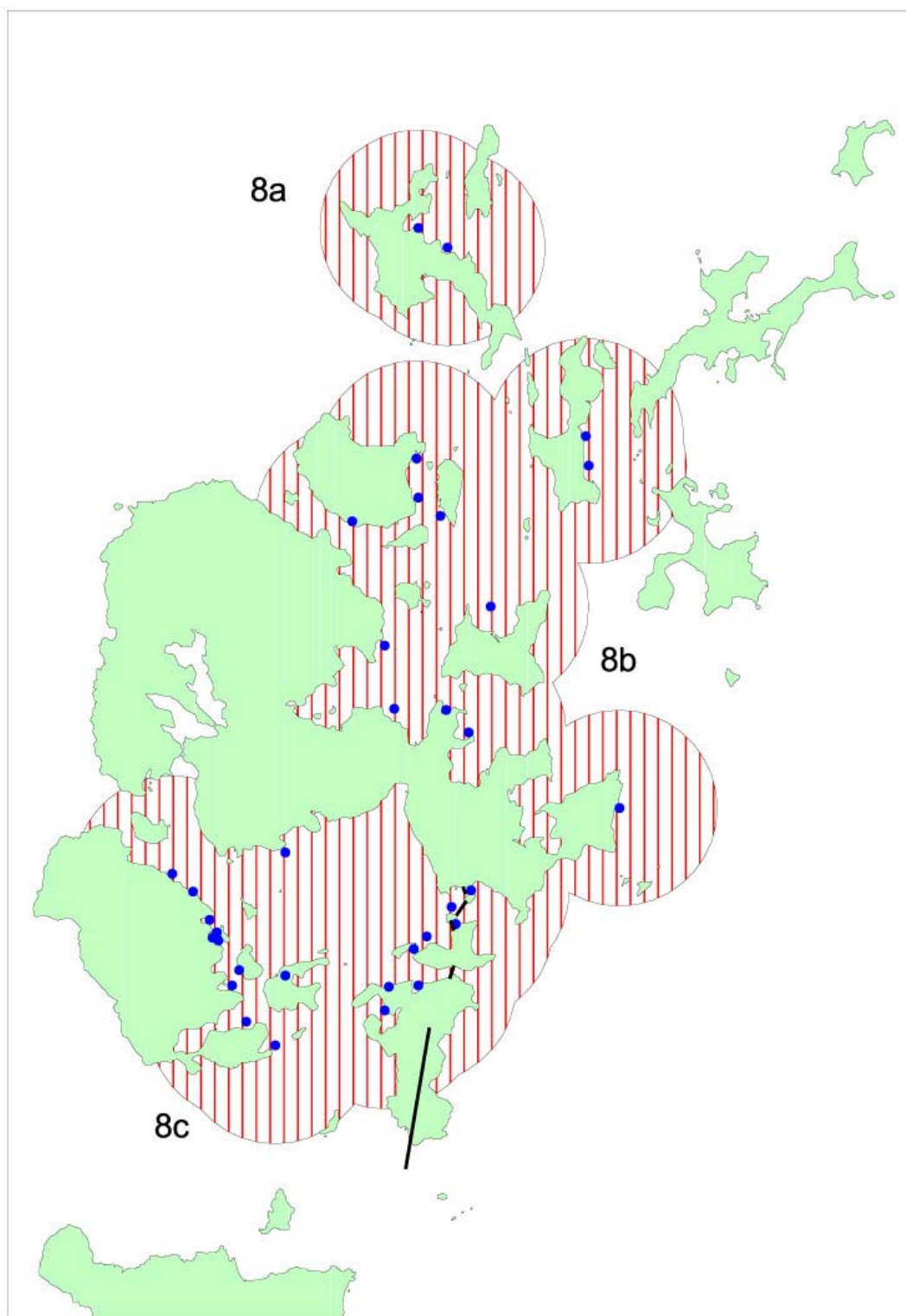
ANNEX C: MANAGEMENT AREAS



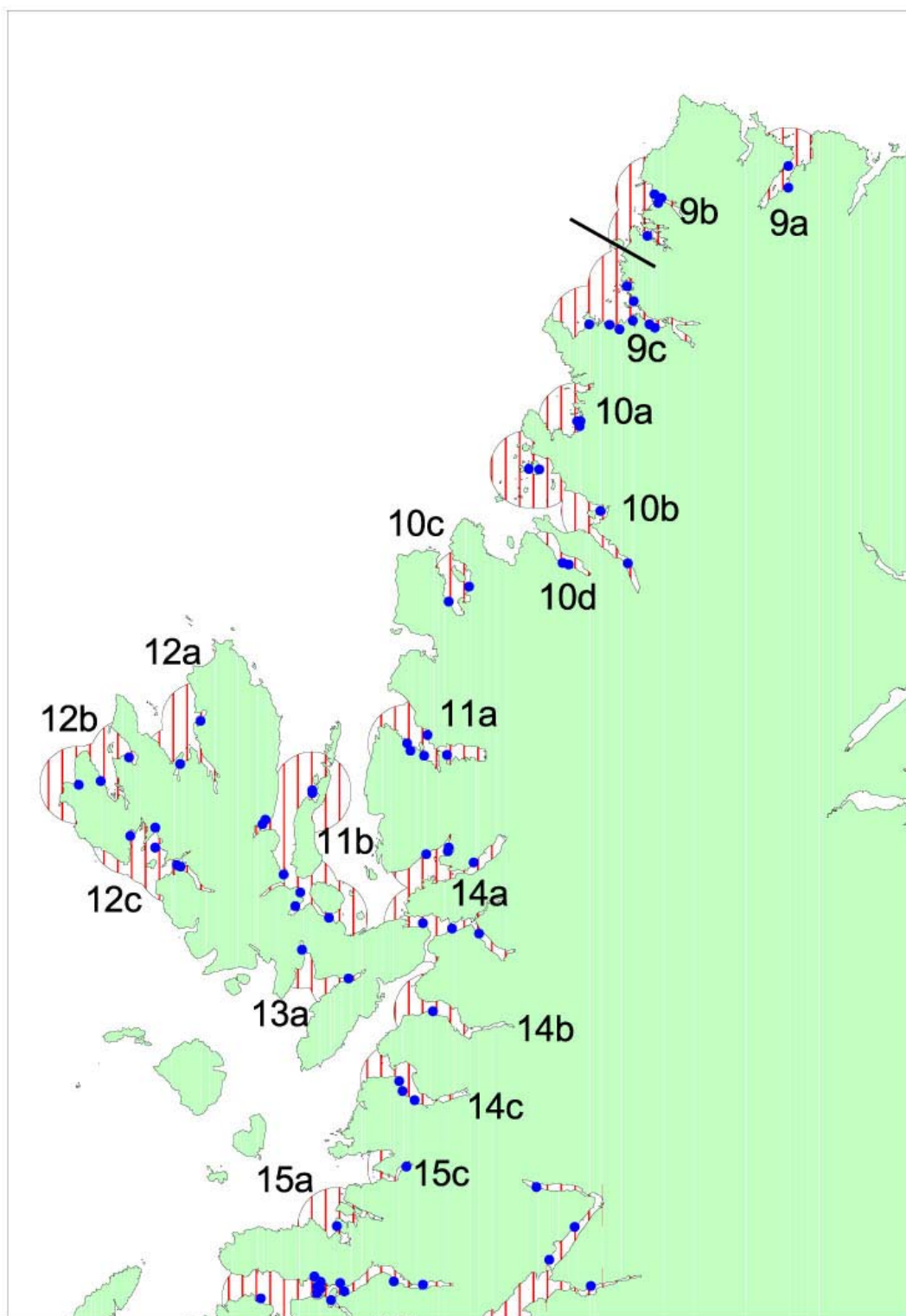
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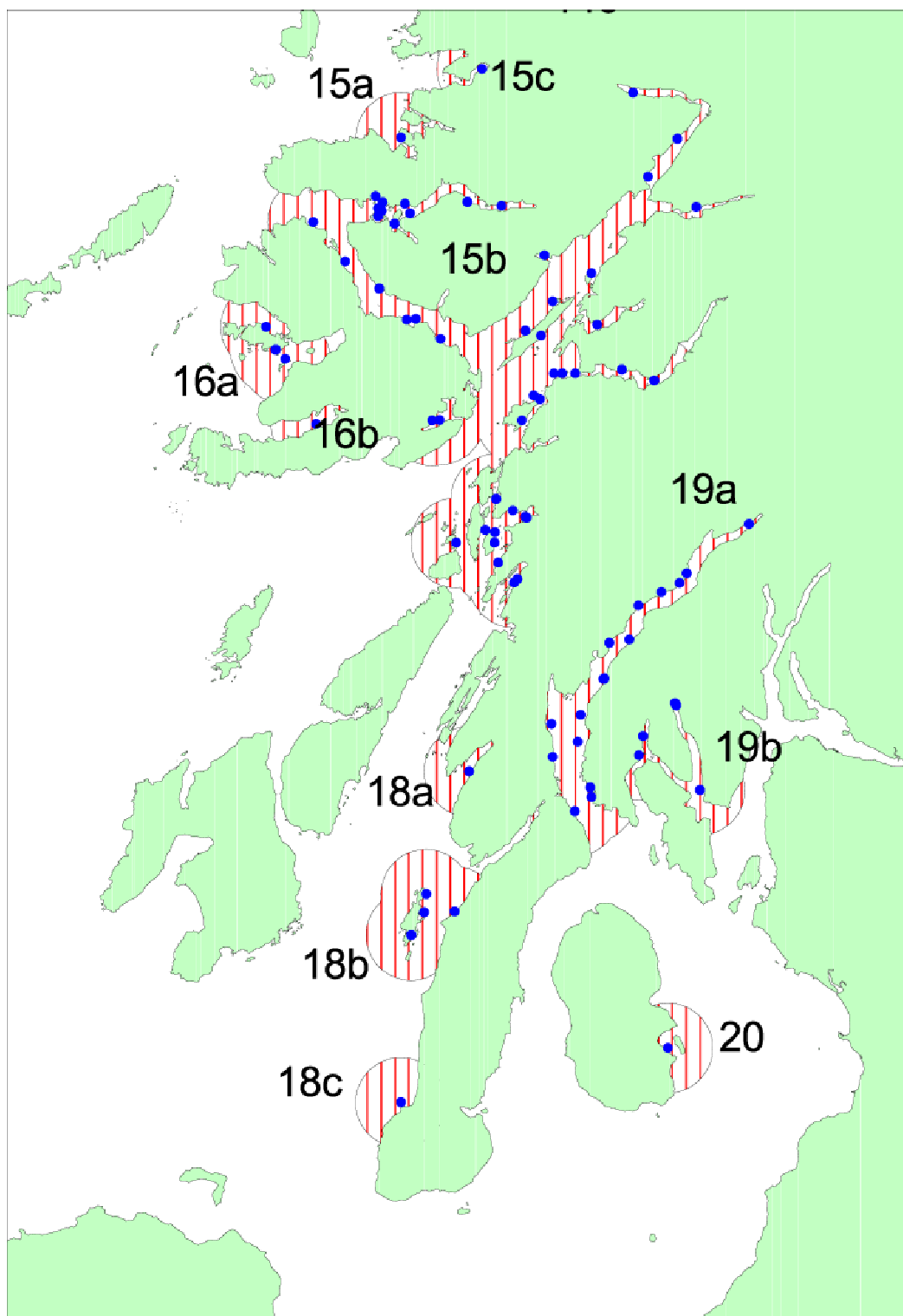
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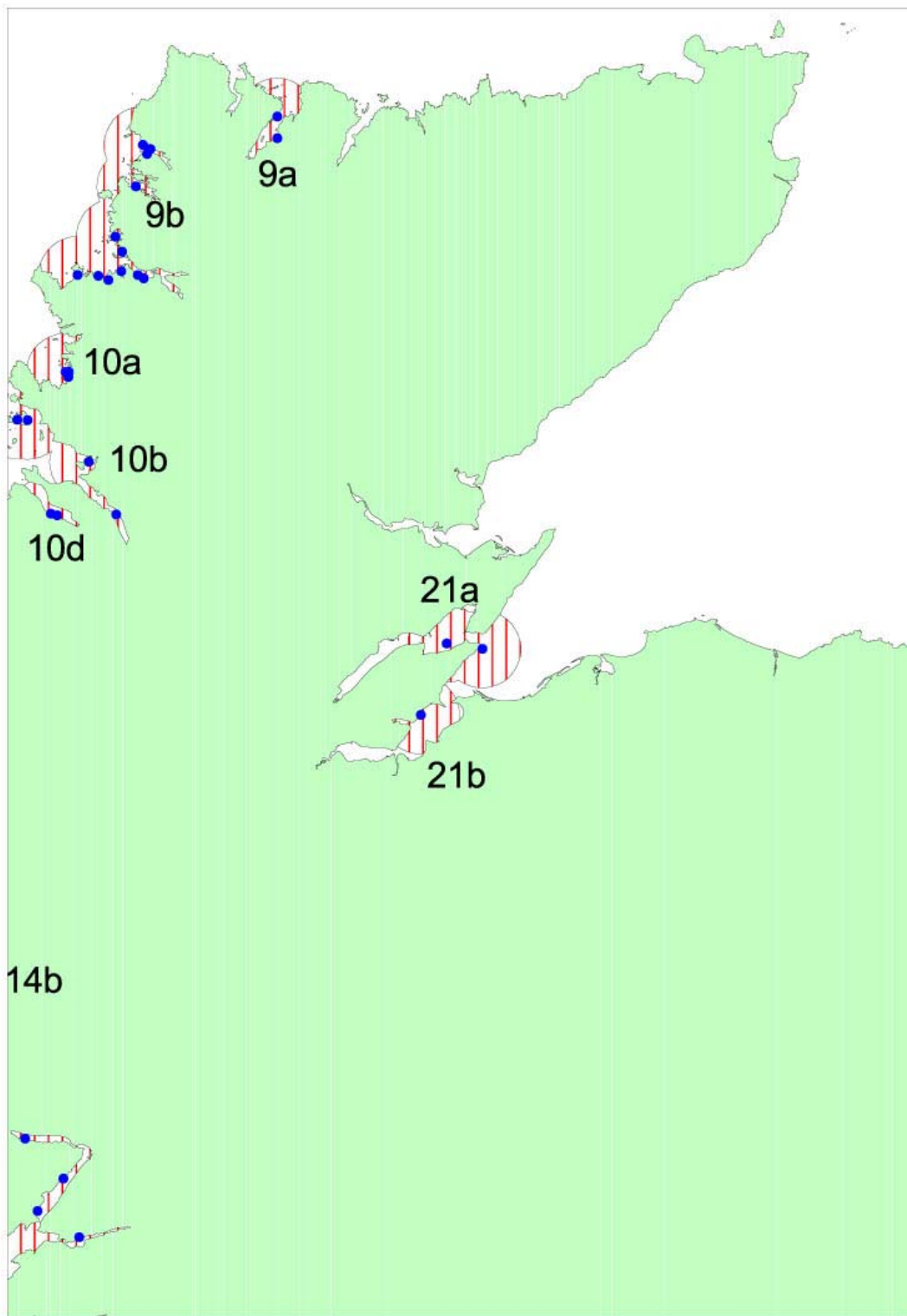
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